

REMARKS/ARGUMENTS

Claims 1-22 are present in this application. By this Amendment, claims 1, 3, 6, 10 and 19 have been amended, and claim 22 as been added. Reconsideration in view of the above amendments and the following remarks is respectfully requested.

Claims 4, 5, 13, 14, 16-18, 20 and 21 were rejected under 35 U.S.C. §112, second paragraph. The Office Action contends that the claimed angles with respect to 'gravity' are unclear. Without further explanation, it is not apparent exactly what is "unclear" about the claimed language. As would be apparent to those of ordinary skill in the art reading the present specification, an angle measured relative to gravity is an angle measured by true horizontal and vertical axes. That is, gravity acts in a true vertical direction such that if an object is dropped on an inclined surface, the object would approach and strike the surface at an angle based on the slope of the surface. The object while dropping would travel in a true vertical direction due to the force of gravity.

The specification describes this concept in the context of the present invention. For example, in paragraph [0025], the specification describes that the boom lift vehicle 10 . . . utilizes sensing structure for sensing an angle of the main boom, preferably relative to gravity. In this context, an inclinometer 30 is attached to the tower boom 18 for measuring an angle of the tower boom 18 relative to gravity (i.e., without regard to an orientation of the vehicle base 12). An angle of the main boom 24 can either be calculated via the inclinometer attached to the tower boom, or an inclinometer may be coupled directly with the main boom 24. The specification further describes in paragraph [0031] that the main boom angle, preferably relative to gravity, is maintained in order to control an angle of the main boom 24 relative to the tower boom 18. In paragraph [0033], the specification describes that the control system uses sensors to

enhance the control of the booms by minimizing the interaction of swing and drive functions with envelope edges. This interaction is due to two factors. First, the envelope is controlled preferably relative to gravity regardless of ground slope The controlled boom angle system minimizes the effect of swing and drive functions when the ground slope varies by automatically introducing either the tower 18 or main boom 24 lift up or down during swing and drive commands to maintain a constant boom angle relative to gravity.

Applicants submit that those of ordinary skill in the art would readily understand what is meant by angles relative to gravity, and Applicants thus respectfully submit that the rejection is misplaced. Withdrawal of the rejection is requested.

Claims 1-3, 6-8, 10, 12, 15, 16 and 19 were rejected under 35 U.S.C. §102(b) over U.S. Patent No. 5,135,074 to Hornagold. This rejection is respectfully traversed.

With reference to Figure 1 in the Hornagold patent, the disclosed structure includes an elevating mechanism 4 where lift and telescoping of a boom unit 5 is effected in a dependent relationship. Hornagold provides that the lift unit 6 is a mechanical linkage including a lift arm 11 pivotally connected to the slide end of the tip booms 8 and to the lift post 10. The pivot couplings and connections of the base boom 7 and the lift arm 11 to the respective posts 9, 10 are arranged and constructed such that the extension of the tip boom 8 creates a pivot force on the boom unit 5 about the pivot post 9 and on the lift arm 11 causing them to raise upwardly, to thereby simultaneously extend and pivotal raise the boom unit 5 and thereby the platform 2. See column 5, line 67 - column 6, line 9. With this dependent relationship, the Hornagold structure utilizes a "single motor means" via hydraulic cylinder unit 12 for positioning of the boom unit 5 on the pivot mount 9 and thereby raising and lowering the platform 2. See column 6, lines 10-

15. With such a dependent relationship, however, it is not possible to define or customize a tower nose pin path except for the single path for which the design is geometrically dependent.

In an effort to clarify this distinction, independent claims 1, 6, 10 and 19 have been amended to recite that pivoting of the tower boom relative to the vehicle base and telescoping of the tower boom are performed independently. Support for this feature of the invention can be found in the specification at, for example, paragraphs [0022] and [0023].

Since anticipation requires that each and every feature of the claimed invention be disclosed in a single prior art reference, and since Hornagold lacks a construction where pivoting and telescoping of a boom are performed independently, Applicants respectfully submit that this rejection is misplaced.

With regard to the dependent claims, Applicants submit that these claims are allowable at least by virtue of their dependency on an allowable independent claim. In addition, since the Office Action contends that these features of the claims are “clearly anticipated” by the Hornagold patent, there is no discussion or reference to specific teachings in the Hornagold patent that meet these features of the invention. Claims 3 and 12 for example define the nose pin predetermined path as (1) a constant radius equal to a fully retracted length of the tower boom for tower boom angles less than a predetermined angle, and (2) a substantially straight line tangent to the constant radius for tower boom angles greater than the predetermined angle. Since the Hornagold design is geometrically dependent, the tower path could not possibly have a purely constant length radius or a straight line and would in fact be a curved path throughout. Claim 3 has been rewritten in independent form and has been further amended to specify that the predetermined angle is “relative to gravity.” Claims 8 and 16 recite that the step of controlling an angle of the main boom relative to the tower boom comprises maintaining the boom angle

relative to gravity as measured at (1) the commencement of a tower lift control or (2) the conclusion of main boom lift command when the main boom is active with a tower lift command. Nowhere does the Hornagold patent even remotely disclose controlling a boom angle relative to gravity. Rather, the Hornagold design can only control the tower relative to the base. This subject matter is thus also lacking in the Hornagold patent.

Reconsideration and withdrawal of the rejection are thus respectfully requested.

Claims 2, 4, 5, 9, 11, 13 and 14 were rejected under 35 U.S.C. §103(a) over Hornagold. This rejection is respectfully traversed.

Applicants respectfully submit that the Hornagold patent similarly lacks any suggestion to modify its disclosure to perform independent pivoting and telescoping of its elevating mechanism 4. Indeed, it is an important objective of the Hornagold structure to use a single motor means for raising and lowering the platform 2. By linking the pivot and telescope functions of the boom unit 5 in a dependent relationship, Hornagold can achieve its goal using a single hydraulic cylinder 12. Applicants thus respectfully submit that Hornagold in fact teaches away from any such modification. As a consequence, Applicants submit that these dependent claims are allowable at least by virtue of their dependency on an allowable independent claim.

Claims 3-5 and 12-14 were rejected under 35 U.S.C. §103(a) over Hornagold in view of U.S. Patent No. 4,162,873 to Smith. This rejection is respectfully traversed.

As noted above, claim 3 has been rewritten in independent form. Claim 3 provides that pivoting of the tower boom relative to the vehicle base and telescoping of the tower boom are controlled based on tower boom angles relative to gravity. Like Hornagold, the Smith patent lacks any teaching of controlling relative to gravity. Moreover, with regard to claims 12-14, since the Hornagold patent teaches away from any modification to independently pivot and

telescope a tower boom, Applicants submit that these claims are allowable at least by virtue of their dependency on an allowable independent claim.

Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 3-5, 12-14, 17 and 20 were rejected under 35 U.S.C. §103(a) over Hornagold in view of U.S. Patent No. 5,211,259 to Kishi. This rejection is respectfully traversed.

Per claims 3-5, Kishi similarly lacks any structure to effect control of a tower boom based on tower boom angles relative to gravity. Moreover, the “signal grooves” in Kishi are arranged for only one path, and despite that Hornagold teaches away from such a modification, Kishi similarly lacks the independent operation discussed above. Applicants thus respectfully submit that dependent claims 12-14, 17 and 20 are allowable at least by virtue of their dependency on an allowable independent claim.

Withdrawal of the rejection is respectfully requested.

Claims 18 and 21 were rejected under 35 U.S.C. §103(a) over Hornagold in view of Kishi and U.S. Patent No. 5,446,980 to Rocke. The Rocke patent similarly does not correct the deficiencies noted above with regard to Hornagold, and Applicants submit that these dependent claims are allowable at least by virtue of their dependency on an allowable independent claim. Withdrawal of the rejection is requested.

Claim 22 has been added and recites among other things that the tower boom nose pin predetermined path is varied based on an angle of the main boom relative to gravity. Support for this concept can be found, for example, in the specification at paragraph [0027] and in Fig. 3. Since the boom unit 5 in the Hornagold patent pivots and telescopes in a dependent relationship, the Hornagold structure is incapable of varying the nose pin path. Applicants thus respectfully submit that this claim is also patentable over the references of record.

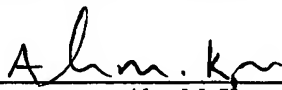
BEAN et al.
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In view of the foregoing amendments and remarks, Applicants respectfully submit that the claims are patentable over the art of record and that the application is in condition for allowance. Should the Examiner believe that anything further is desirable in order to place the application in condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Prompt passage to issuance is earnestly solicited.

Respectfully submitted,

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